

Remarks

Reconsideration of this application is requested. By this amendment, claims 1, 2, and 4 have been amended and claims 33-36 have been added. Accordingly, claims 1-36 are in the application.

Specification

The specification has been amended to correct a typographical error as suggested by the Examiner on page 2 of the Office action.

Response to 35 U.S.C. §112 Rejection of claims 1

Claim 1 has been amended. It is believed that claim 1 is in conformance with 35 U.S.C. §112 and that the amendment to claim 1 does not narrow the scope of this claim. Therefore, Applicants believe that at least for this reason, claim 1 is not subject to the complete bar against the use of the Doctrine of Equivalents.

Response to 35 U.S.C. §103 Rejection of claims 1, 2, 4, 7, 10, 11, 13, and 30

The Office action rejects claims 1, 2, 4, 7, 10, 11, 13, and 30 under 35 U.S.C. §103(a) as being unpatentable over Maheshwari (U.S. Patent No. 5,974,508) in view of Teoman et al. (U.S. Patent No. 6,463,509). Applicants respectfully traverse this rejection in view of the remarks that follow.

The proposed modification will render Maheshwari unsatisfactory for its intended purpose.

It is well established that If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.

Modifying Maheshwari as suggested by the Office action, i.e., using a non-volatile, relatively slower cache memory (e.g., cache 25 of Teoman et al.) in place of caches 150 and 151 of Maheshwari may render Maheshwari unsatisfactory for its intended purpose.

According to Maheshwari, it appears that improving performance of a central processing unit (CPU) , e.g., CPU 100, is important. Maheshwari discusses reducing time spend by the CPU in waiting for memory accesses, e.g., reducing access times of memory items such as instructions and data from external memory by using a relatively small (e.g., 2 kilobytes), integrated/internal cache (e.g., caches 150 and 151 of FIG. 1 of Maheshwari) having a relatively faster access time compared to external memory. (See e.g., col. 1, lines 24-29; col. 1, lines 48-52; and col. 3, lines 30-51 of Maheshwari). Applicants submit that using a relatively slow, non-volatile storage as discussed in Teoman et al. in place of the cache memory discussed in Maheshwari may reduce performance of the CPU 100 discussed in Maheshwari , thereby rendering Maheshwari unsatisfactory for its intended purpose.

The motivation provided by the Office action is not supported by the cited documents

On page 3 of the Office action, the Examiner states that it would have been obvious by one of ordinary skill in the art at the time the invention was made to replace the cache of Maheshwari with the non-volatile mass storage cache of Teoman et al. because a non-volatile mass storage cache has the advantage of not losing data during power loss and it can hold larger amounts of data than a regular cache, thus allowing it to be used as a boot source.

While not conceding that the Office action's characterization of the cited documents is accurate, Applicants submit that Maheshwari does not teach anywhere in that document that it would be desirable to have a non-volatile cache or that the instruction or data caches (e.g., 150 and 151 of FIG. 1 of Maheshwari) be used as a boot source. Rather, as discussed above, Maheshwari appears to seek to improve performance of a CPU by reducing memory access time. Accordingly, Applicants submit that there is not suggestion or motivation in the cited documents to support the Examiner's statement on page 3 of the Office action.

The proposed modification will change the principle of operation of Maheshwari

It is well established that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being

modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.

Applicants submit that the suggested combination of references, i.e., using a non-volatile cache as discussed in Teoman et al. to replace the cache discussed in Maheshwari, would require a substantial reconstruction and redesign of the elements shown in Maheshwari as well as a change in the basic principle under which the Maheshwari construction was designed to operate. Applicants respectfully submit that it is not a trivial task to integrate a non-volatile memory internal to a CPU. Using the non-volatile cache discussed in Teoman et al. to replace the instruction and data caches of Maheshwari may also introduce larger memory access delays that may result in the CPU (100 of Teoman et al.) waiting longer periods of time for these memory accesses. The programs executed by CPU 100 may need to be modified to account for these delays.

Since the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.

Since the Office action has not established a prima facie case of obviousness using Maheshwari and Teoman et al. for the reasons stated above, the rejection of claims 1, 7, 10, and 30 should be withdrawn and it is believed that claims 1, 7, 10, and 30 are in condition for allowance.

Claims 2 and 4 depend from claim 1 and is believed to be allowable for the same reasons as claim 1. Claims 11 and 13 depend from claim 10 and are believed to be allowable for the same reasons as claim 10.

Response to 35 U.S.C. §103 Rejection of claims 3, 8, 31, and 32

The Office action rejects claims 3, 8, 31 and 32 under 35 U.S.C. §103(a) as being unpatentable over Maheshwari (U.S. Patent No. 5,974,508) in view of Teoman et al. (U.S. Patent No. 6,463,509) as applied to claims 1, 7 and 30 above, and further in view of Berstis (U.S. Patent Publication No. 2002/0174370). Applicants respectfully traverse this rejection in view of the remarks that follow.

Claim 3 depends from claim 1 and is believed to be allowable for the same reasons as claim 1. Claim 8 depends from claim 7 and is believed to be allowable for the same reasons as claim 7. Claims 31 and 32 depend either directly or indirectly from claim 30 and are believed to be allowable for the same reasons as claim 30.

Response to 35 U.S.C. §103 Rejection of claims 5, 6, 9 and 12

The Office action rejects claims 5, 6, 9 and 12 under 35 U.S.C. §103(a) as being unpatentable over Maheshwari (U.S. Patent No. 5,974,508) in view of Teoman et al. (U.S. Patent No. 6,463,509) as applied to claims 1, 4 and 30 above, and further in view of Shirata et al. (U.S. Patent Publication No. 2001/0043784). Applicants respectfully traverse this rejection in view of the remarks that follow.

Claims 5 and 6 depend indirectly from claim 1 and are believed to be allowable for the same reasons as claim 1. Claim 9 depends from claim 7 and is believed to be allowable for the same reasons as claim 7. Claim 12 depends from claim 10 and is believed to be allowable for the same reasons as claim 10.

Response to 35 U.S.C. §103 Rejection of claims 15-29

The Office action rejects claims 15-29 under 35 U.S.C. §103(a) as being unpatentable over Maheshwari (U.S. Patent No. 5,974,508) in view of Teoman et al. (U.S. Patent No. 6,463,509) and further in view of Berstis (U.S. Patent Publication No. 2002/0174370). Applicants respectfully traverse this rejection in view of the remarks that follow.

As discussed above, Applicants submit that the Office action has not established a prima facie case of obviousness using Maheshwari and Teoman et al. Thus, the rejection of claims 15 and 23 should be withdrawn and it is believed that claims 15 and 23 are in condition for allowance.

Claims 16-22 depend either directly or indirectly from claim 15 and are believed to be allowable for the same reasons as claim 15. Claims 24-29 depend either directly or indirectly from claim 23 and are believed to be allowable for the same reasons as claim 23.

New Claims

As indicated above, claims 33-36 have been added and are believed to be allowable. Applicants submit that no new matter has been added.

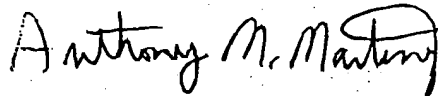
Conclusion

In view of all of the above, it is believed that Applicants' claims are allowable, and the case is in condition for allowance, which action is earnestly solicited. Reconsideration of the rejections and objections is respectfully requested.

Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666.

If the Examiner believes that there are any informalities that can be corrected by an Examiner's amendment, a telephone call to the undersigned at (480) 552-0624 is respectfully solicited.

Respectfully submitted,
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